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We must act now to save nature – our life-support system

PHOTOS: PETE STEWARD/COURTESY

Taita Apalis (left) and Taito Thrush. These two birds ore threatened with extinction because of deforestation

The current assault on nature severely threatens natural systems that support life. Immediate transformative change is required to avert the most severe consequences and put humanity back on track towards conserving nature – and our common future.

Biodiversity – the essential variety of life forms on Earth – continues to decline in every region of the world, significantly reducing nature's capacity to contribute to people's well-being. This alarming trend endangers economies, livelihoods, food security and the quality of life of people everywhere, according to a hard-hitting report released recently by the UN Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). The unprecedented scientific report joins a public outcry for urgent action on the biodiversity crisis, saying business as usual is no longer an option.

THE BAD NEWS: Direct and indirect drivers of change have accelerated during the past 50 years.

The rate of global change in nature during the past 50 years is unprecedented in human history. The direct drivers of change in nature with the largest global impact have been (starting with those with most impact): changes in land and sea use; direct exploitation of organisms; climate change; pollution; and invasion of alien species.

Those five direct drivers result from an array of underlying causes – the indirect drivers of change – which are in turn underpinned by societal values and behaviours. These include production and consumption patterns, human population dynamics and trends, trade, technological innovations and local through global governance. The rate of change in the direct and indirect drivers differs among regions and countries.

For terrestrial and freshwater ecosystems, land-use change has had the largest negative impact on nature since 1970. Land-use change is followed by direct exploitation, in particular overexploitation, of animals, plants and other organisms mainly via harvesting, logging, hunting and fishing. In marine ecosystems, direct exploitation of organisms (mainly fishing) has had the largest impact, followed by land/sea-use change.

Agricultural expansion is the most widespread form of land-use change, with over one third of the terrestrial land surface being used for cropping or animal husbandry. This expansion, alongside a doubling of urban area since 1992 and an unprecedented expansion of infrastructure linked to growing population and consumption, has come mostly at the expense of indigenous forests, wetlands and grasslands. In freshwater ecosystems, a series of combined threats that include land-use change, including water extraction, exploitation, pollution, climate change and invasive species, are prevalent.

Human activities have had a large and widespread impact on the world's oceans. These include direct exploitation, in particular overexploitation, of fish, shellfish and other organisms, land- and sea-based pollution, including from river networks, and land/sea-use change, including coastal development for infrastructure and aquaculture.

PHOTO: JOHN MWACHARO

WHAT CAN WE DO?

What can we – as individuals, the private sector, national and county governments – do to support transformative change in Kenya?

SAVE THE FORESTS WE HAVE

STOP ALL logging, charcoal making, clearing for agriculture and de-gazettements in indigenous forests. The government needs to support this effort by (a) stronger enforcement of existing regulations; (b) providing incentives for charcoal substitutes (briquettes from farm waste, LPG cooking gas, etc.); (c) helping farmers to produce more from existing land; and (d) avoiding forests when planning roads, dams and other infrastructure.

PLANT AND NURTURE MORE TREES

Kenyans already plant a lot of trees. However, we need to step up efforts to (a) raise more indigenous seedlings; (b) nurture the planted seedlings until they can survive on their own; (c) plant trees in urban spaces to enable children to keep a connection to nature.

WHAT CAN WE DO?

SAVE THE WETLANDS WE HAVE.

STOP ALL draining of and encroachment on wetlands. Regulate small-scale irrigation to keep rivers flowing. Plant papyrus around freshwater lakes, and grass and trees along rivers (but avoid planting trees in wetlands). Recognize and respect seasonal wetlands. Encourage industry to clean their waste water before discharging it. Build more urban sewage treatment plants. Keep roads, railways, urban buildings and tourist hotels at least 30 metres away from all wetlands, rivers and beaches.

STOP THROWING AWAY PLASTICS

We don't have to live in a "throw-away" world. NEMA needs to promulgate and enforce a ban on cling film and plastic netting, which are worse than thin plastic bags. Supermarkets and hotels need to encourage their customers to bring or buy re-usable bags and shift to wrapping materials such as sisal, banana and water hyacinth fibers. Industry needs to set up more recycling factories. And we, as individuals, need to keep our plastic waste and take it to the recycling centres.

PHOTO: PIXABAY

Climate change is increasingly exacerbating the impact of other drivers on nature and human well-being.

Humans are estimated to have caused an observed warming of approximately 1.0°C by 2017 relative to pre-industrial levels, with average temperatures over the past 30 years rising by 0.2°C per decade. The frequency and intensity of extreme weather events, and the fires, floods and droughts that they can bring, have increased in the past 50 years. Meanwhile the global average sea level has risen by 16 to 21 cm since 1900, and at a rate of more than 3 mm per year over the past two decades. These changes have contributed to widespread impacts in many aspects of biodiversity, including species distributions, phenology, population dynamics, community structure and ecosystem function.

Many types of pollution, as well as invasive alien species, are increasing, with negative impacts for nature.

Although global trends are mixed, air, water and soil pollution have continued to increase in some areas. Marine plastic pollution in particular has increased tenfold since 1980, affecting at least 267 species, including 86 per cent of marine turtles, 44 per cent of seabirds and 43 per cent of marine mammals. This can affect humans through food chains. Greenhouse gas emissions, untreated urban and rural waste, pollutants from industrial, mining and agricultural activities, oil spills and toxic dumping have had strong negative effects on soil, freshwater and marine water quality and the global atmosphere.

Cumulative records of alien species have increased by 40 per cent since 1980, associated with increased trade and human population dynamics and trends. Nearly one fifth of the Earth's surface is at risk of plant and animal invasions, impacting native species, ecosystem functions and nature's contributions to people, as well as economies and human health. The rate of introduction of new invasive alien species seems higher than ever before and with no signs of slowing.

PHOTO: EVENING TAO/FREEPIK.COM

In the past 50 years, the human population has doubled, the global economy has grown nearly 4-fold and global trade has grown 10-fold, together driving up the demands for energy and materials.

A variety of economic, political and social factors, including global trade and the spatial decoupling of production from consumption, have shifted the economic and environmental gains and losses of production and consumption, contributing to new economic opportunities, but also impacts on nature and its contributions to people. Levels of consumption of material goods (food, feed, timber and fibre) vary greatly, and unequal access to material goods can be associated with inequity and may lead to social conflict.

Economic exchange contributes to aggregate economic development, yet often is negotiated between actors and institutions of unequal power, which influences the distribution of benefits and long-term impacts. Countries at different levels of development have experienced different levels of deterioration of nature for any given gain in economic growth. Exclusion, scarcities and/or unequal distributions of nature's contributions to people may, in a complex interaction with other factors, fuel social instability and conflict. Armed conflicts have an impact on ecosystems beyond destabilizing effects on societies and a range of indirect impacts, including displacement of people and activities.

PHOTO: WELCOMIA/FREEPIK.COM

Economic incentives generally have favoured expanding economic activity, and often environmental harm, over conservation or restoration.

Incorporating consideration of the multiple values of ecosystem functions and of nature's contribution to people into economic incentives has been shown to permit better ecological, economic and social outcomes.

Local, national, regional and global governance have improved outcomes in this way by supporting policies, innovation and the elimination of environmentally harmful subsidies. This includes introducing incentives in line with the value of

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nature's contribution to people, increasing sustainable land/sea-use management and enforcing regulations, among other measures.

Harmful economic incentives and policies associated with unsustainable practices of fisheries, aquaculture, agriculture (including fertilizer and pesticide use), livestock, forestry, mining and energy (including fossil fuels and biofuels) are often associated with land/sea-use change and overexploitation of natural resources, as well as inefficient production and waste management. Vested interests may oppose the removal of subsidies or the introduction of other policies. Yet, policy reforms to deal with such causes of environmental harm offer the potential to both conserve nature and provide economic benefits, including when policies are based upon more and better understanding of the multiple values of nature's contributions.

Nature managed by indigenous peoples and local communities is under increasing pressure.

Nature is generally declining less rapidly in indigenous peoples' land than in other lands, but is nevertheless declining, as is the knowledge of how to manage it. At least a quarter of the global land area is traditionally owned, managed, used or occupied by indigenous peoples. These areas include approximately 35 per cent of the area that is formally protected, and approximately 35 per cent of all remaining terrestrial areas with very low human intervention. In addition, a diverse array of local communities, including farmers, fishers, herders, hunters, ranchers and forest-users, manage significant areas under various property and access regimes. Among the local indicators developed and used by indigenous peoples and local communities, 72 per cent show negative trends in nature that underpin local livelihoods and well-being.

The areas managed (under various types of tenure and access regimes) by indigenous peoples and local communities are facing growing resource extraction, commodity production, mining and transport and energy infrastructure, with various consequences for local livelihoods and health. Some climate change mitigation programmes have had negative impacts on indigenous peoples and local communities. The negative impacts of all these pressures include continued loss of subsistence and traditional livelihoods from ongoing deforestation, mining, loss of wetlands, the spread of unsustainable agriculture, forestry and fishing practices and impacts on health and well-being from pollution and water insecurity. These impacts also challenge traditional management, the transmission of indigenous and local knowledge, the potential for sharing of benefits arising from use, and the ability of indigenous peoples and local communities to conserve and sustainably manage, wild and domesticated biodiversity that are also relevant to the broader society.

PHOTO: NK ARCHIVES

Community members engaged in biodiversity monitoring.

THE CHALLENGE: Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories. Goals for 2030 and beyond may only be achieved through transformative changes across economic, social, political and technological factors.

Past and ongoing rapid declines in biodiversity, ecosystem functions and many of nature's contributions to people mean that most international societal and environmental goals, such as those embodied in the Aichi Biodiversity Targets and the 2030 Agenda for Sustainable Development, will not be achieved based on current trajectories. These declines will also undermine other goals, such as those specified in the Paris Agreement adopted under the United Nations Framework Convention on Climate Change and the 2050 Vision for Biodiversity. The negative trends in biodiversity and

NATURE'S DECLINE & THE GLOBAL GOALS. WE ARE NOT ON TRACK.

Protecting nature, solving the climate crisis and achieving sustainability cannot be reached by current business as usual. We need a radical transformation of our society if we are to stand a chance in front of ecological breakdown. Governments and businesses are not doing enough.

AICHI BIODIVERSITY TARGETS

- Good progress towards 4/20 global goals
- Moderate progress towards 7/20 global goals
- Poor progress towards 6/20 global goals

SUSTAINABLE DEVELOPMENT GOALS

8/17 SDGs are undermined by nature's decline - related to poverty, hunger, health, water, cities, climate, ocean, and land.

35/44 80% of the SDG targets related to nature have seen insufficient or negative progress.

PARIS CLIMATE AGREEMENT

- Our current climate policy means 4°C of global warming, with catastrophic climate impacts.
- Our pledges and targets only bring us to 3°C of warming.
- The Paris Agreement - limiting global temperature rise to well below 2°C and pursuing efforts towards 1.5°C.

ecosystem functions are projected to continue or worsen in many future scenarios in response to indirect drivers such as rapid human population growth, unsustainable production and consumption and associated technological development.

In contrast, scenarios and pathways that explore the effects of a low-to-moderate population growth, and transformative changes in production and consumption of energy, food, feed, fibre and water, sustainable use, equitable sharing of the benefits arising from use and nature-friendly climate adaptation and mitigation, will better support the achievement of future societal and environmental objectives.

PHOTO: ISTOCK.COM

Implementation of policy responses and actions to conserve nature and manage it more sustainably has progressed, yielding positive outcomes relative to scenarios of no intervention, but not sufficiently to stem the direct and indirect drivers of nature deterioration.

It is therefore likely that most of the Aichi Biodiversity Targets for 2020 will be missed. Some of the Aichi Biodiversity Targets will be partially achieved, for example those related to policy responses such as the spatial extent of terrestrial and marine protected areas, identification and prioritization of invasive alien species, national biodiversity strategies and action plans and the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity. However, while protected areas now cover 15 per cent of terrestrial and freshwater environments and 7 per cent of the marine realm, they only partly cover important sites for biodiversity and are not yet fully ecologically representative and effectively or equitably managed.

There has been significant growth in official development assistance in support of the Convention on Biological Diversity and funding provided by the Global Environment Facility, with biodiversity aid flows reaching $8.7 billion annually. However, current resource mobilization from all sources is not sufficient to achieve the Aichi Biodiversity Targets. In addition, only one in five of the strategic objective and goals across six global agreements relating to nature and the protection of the global environment are demonstrably on track to be met. For nearly one third of the goals of these conventions there has been little or no progress towards them or, instead, movement away from them.

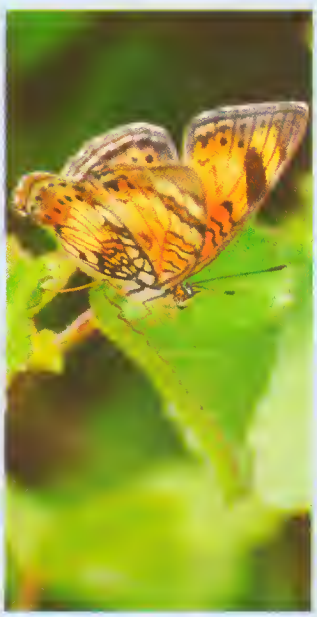

PHOTO: JOHN MWACHARO

Nature is essential for achieving the Sustainable Development Goals.

However, taking into consideration that the Sustainable Development Goals are integrated and indivisible, as well as implemented nationally, current negative trends in biodiversity and ecosystems will undermine progress towards 80 per cent (35 out of 44) of the assessed targets of goals related to poverty, hunger, health, water, cities, climate, oceans and land.

There is a critical need for future policy targets, indicators and datasets to more explicitly account for aspects of nature and their relevance to human well-being in order to more effectively track the consequences of trends in nature on Sustainable Development Goals. Some pathways chosen to achieve the goals related to energy, economic growth, industry and infrastructure and sustainable consumption and production, as well as targets related to poverty, food security and cities, could have substantial positive or negative impacts on nature and therefore on the achievement of other Sustainable Development Goals.

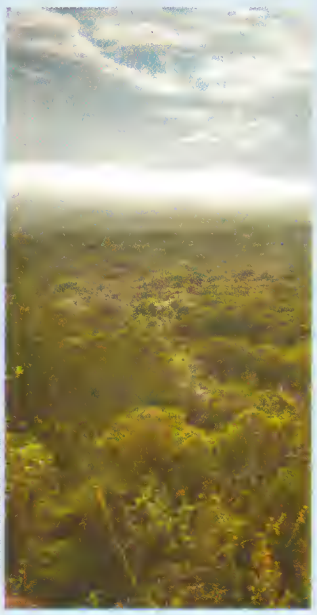

PHOTO: JEROME STARKEY

Areas of the world projected to experience significant negative effects from global changes in climate, biodiversity, ecosystem functions and nature's contributions to people are also home to large concentrations of indigenous peoples and many of the world's poorest communities.

Because of their strong dependency on nature and its contributions for subsistence, livelihoods and health, those communities will be disproportionately hard hit by those negative changes. Those negative effects also influence the ability of indigenous peoples and local communities to manage and conserve wild and domesticated biodiversity and nature's contributions to people. Indigenous peoples and local communities have been proactively confronting such challenges in partnership with each other and with an array of other stakeholders, through co-management systems and local and regional monitoring networks and by revitalizing and adapting local management systems. Regional and global scenarios lack an explicit consideration of the views, perspectives and rights of indigenous peoples and local communities, their knowledge and understanding of large regions and ecosystems and their desired future development pathways.

PHOTO: WELCOMIA/FREEPIK.COM

Except in scenarios that include transformative change, negative trends in nature, ecosystem functions and in many of nature's contributions to people are projected to continue to 2050 and beyond.

This worrying outlook is due to the projected impacts of increasing land/and sea-use change, exploitation of organisms and climate change. Negative impacts arising from pollution and invasive alien species will likely exacerbate these trends.

There are large regional differences in the projected patterns of future biodiversity and ecosystem functions and loss and changes in nature's contributions to people. These differences arise from direct and indirect drivers of change, which are projected to impact regions in different ways. While regions worldwide face further declines in biodiversity in future projections, tropical regions face particular combined risks of declines due to interactions of climate change, land-use change and fisheries exploitation. Marine and terrestrial biodiversity

in boreal, subpolar and polar regions is projected to decline mostly because of warming, sea ice retreat and enhanced ocean acidification.

The magnitude of impacts and the differences between regions are much greater in scenarios with rapid increases in consumption or human population than in scenarios based on sustainability. ***Acting immediately and simultaneously on multiple indirect and direct drivers has the potential to slow, halt and even reverse some aspects of biodiversity and ecosystem loss.***

Climate change is projected to become increasingly important as a direct driver of changes in nature and its contributions to people in the next decades.

Scenarios show that meeting the Sustainable Development Goals and the 2050 Vision for Biodiversity depends on taking into account climate change impacts in the definition of future goals and objectives. The future impacts of climate change are projected to become more pronounced in the next decades, with variable relative effects depending on scenario and geographic region. Scenarios project mostly adverse climate change effects on biodiversity and ecosystem functioning, which worsen, in some cases exponentially, with incremental global warming.

Even for global warming of 1.5°C to 2°C, the majority of terrestrial species ranges are projected to shrink profoundly. Changes in ranges can adversely affect the capacity of terrestrial protected areas to conserve species, greatly increase local species turnover and substantially increase the risk of global extinctions. For example, a synthesis of many studies estimates that the fraction of species at risk of climate-related extinction is 5 per cent at 2°C warming, rising to 16 per cent at 4.3°C warming. Coral reefs are particularly vulnerable to climate change and are projected to decline to 10-30 per cent of former cover at 1.5°C warming and to less than 1 per cent at 2°C warming. Therefore, scenarios show that limiting global warming to well below 2°C plays a critical role in reducing adverse impacts on nature and its contributions to people.

THE GOOD NEWS: Nature can be conserved, restored and used sustainably while simultaneously meeting other global societal goals through urgent and concerted efforts fostering transformative change.

Societal goals – including those for food, water, energy, health and the achievement of human well-being for all, mitigating and adapting to climate change and conserving and sustainably using nature – can be achieved in sustainable pathways. These include the rapid and improved deployment of existing policy instruments and new initiatives that more effectively enlist individual and collective action for transformative change. Since current structures often inhibit sustainable development and actually represent the indirect drivers of biodiversity loss, such fundamental, structural change is called for.

By its very nature, transformative change can expect opposition from those with interests vested in the status quo, but such opposition can be overcome for the broader public good. If obstacles are overcome, commitment to mutually supportive international goals and targets, supporting actions by indigenous peoples and local communities at the local level, new frameworks for private sector investment and innovation, inclusive and adaptive governance approaches and arrangements, multi-sectoral planning and strategic policy mixes can help to transform the public and private sectors to achieve sustainability at the local, national and global levels.

PHOTO: FREEPIK.COM

Five main interventions ("levers") can generate transformative change by tackling the underlying indirect drivers of nature deterioration:

1. incentives and capacity-building;
2. cross-sectoral cooperation;
3. pre-emptive action;
4. decision-making in the context of resilience and uncertainty; and,
5. environmental law and implementation.

Employing these levers involves the following, in turn:

1. developing incentives and widespread capacity for environmental responsibility and eliminating perverse incentives;
2. reforming sectoral and segmented decision-making to promote integration across sectors and jurisdictions;
3. taking pre-emptive and precautionary actions in regulatory and management institutions and businesses to avoid, mitigate and remedy the deterioration of nature, and monitoring their outcomes;
4. managing for resilient social and ecological systems in the face of uncertainty and complexity to deliver decisions that are robust in a wide range of scenarios; and
5. strengthening environmental laws and policies and their implementation, and the rule of law more generally.

All five levers may require new resources, particularly in low-capacity contexts such as in many developing countries.

June Evening Skies

BY FLEUR NG'WENO

Planets and moon, June 2019

On June 1 & 2, the 'old' crescent moon is low in the east at dawn, near the bright planet Venus. June 3 is new moon, with its sunlit side turned away from the Earth. When the slender 'new' moon is sighted over the sunset on June 4 it will mark the end of the Islamic month of Ramadhan.

The planet Jupiter is especially bright this month, fully lit by the sun, and in the sky most of the night. Saturn, less bright, seems to follow Jupiter. The two planets seem to move from east to west across the sky with the stars –actually it's our Earth turning towards the east. The moon is close to Jupiter on June 16, and becomes full on June 17. It's near Saturn on June 18 & 19.

Above the sunset in the evening, Mars is sinking lower while little Mercury rises. On the 4th the crescent moon is near Mercury, and on the 5th near Mars. The two planets are close to each other at mid-month, passing each other on June 17-18.

June stars

In the north, the constellation of the Plough or Big Dipper is low in the sky. Above it, high in the northeast, is the orange star Arcturus. The blue-white star Spica is high overhead. The moon is near Pollux in the constellation Gemini on June 6, near Regulus in Leo on the 8th, and near Spica in Virgo on the 12th.

In the south, the Southern Cross is upright on early evenings in early June. It's a group of four bright stars in the shape of a Christian cross. There's also a faint fifth star. The Cross tilts to the west during the evening and during the month. East (left) of the Cross are two very bright stars – Alpha and Beta Centauri in the constellation of the Centaur. Bright Alpha Centauri is actually three stars – the nearest stars to our earth.

JUNE 2019 AT A GLIMPSE

Jun 5th	Morning Bird Walk
Jun 8th	FoNA Tree Walk
Jun 12th	Morning Bird Walk
Jun 15th	FoCP Nature Walk
Jun 16th	Sunday Bird Watch
Jun 19th	Morning Bird Walk
Jun 26th	Morning Bird Walk/Public Talk

Bird ringing every Tuesday morning (check with Ornithology section, National Museums).

Birders Please Note! The Wednesday Morning Birdwalks meet at 8:30 am at the Nairobi National Museum. Transport is on a self-help basis. The group meets in the courtyard of the Nairobi National Museum, past the entrance to the galleries. We normally return at about 12:30 pm.

The Sunday Birdwatch on the THIRD Sunday of each month now also meets at 8:30 am, at the same location. It is a day trip; please bring water and lunch.

Mombasa Birdwalks On the 3rd Saturday of each month. For meeting time and place, please contact Taibali Hamzali <thamzali@gmail.com> / 0733-980540; or Doris Schaule <dorischaule@gmail.com> / 0722-277752. Or check Facebook page: <https://www.facebook.com/groups/FFJmombasa/>

Contact the office for information on other birdwalks in Kakamega, Kisumu, and other sites

Ngong Forest walks - 1st and 3rd Saturday at 9.00 am. Contact Simon 0729-840715

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For details on associated groups such as Youth Committee, Succulenta, and Friends of Nairobi Arboretum, City Park or Arabuko-Sokoke Forest, contact office@naturekenya.org